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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/722,918

11/26/2003

Jonathan Jedwab

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09/06/2006

HEWLETT PACKARD COMPANY  
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FORT COLLINS, CO 80527-2400

EXAMINER

RIZK, SAMIR WADIE

ART UNIT

PAPER NUMBER

2133

DATE MAILED: 09/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/722,918	<b>Applicant(s)</b> JEDWAB ET AL.	
	<b>Examiner</b> Sam Rizk	<b>Art Unit</b> 2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,9-12,19,25-27,34 and 35 is/are rejected.
- 7) ☒ Claim(s) 2-8,13-18,20,24 and 28-33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11/26/2006 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/26/2003
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

***DETAILED ACTIONS***

- Claims 1-35 have been submitted for examination
- Claims 1, 9-12, 19, 25-27, 34 and 35 have been rejected
- Claims 2-8, 13-18, 20-24 and 28-33 are objected to

***Drawings***

1. Figures 2-4 should be designated by a legend such as --Background Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.
2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:
  - Reference sign **(72)** in page 14, line (17) in the specifications
  - Reference sign **(74)** in page 14, lines (12), (20), (25-28) in the specifications
  - Reference sign **(76)** in page 15, line 32 in the specification.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148

USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
3. Claims 1, 9-11, 19, 26, 27, 34 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Van Brocklin et al. US patent no. 6,839,275 (Hereinafter

Van Brocklin) and further in views of Marinissen et al. US patent no. 6,721,911 (Hereinafter Marinissen) and Davis et al. US publication no. 2003/0023922 (Hereinafter Davis).

The applied references of Van Brocklin and Davis have a Hewlett Packard as common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

4. In regard to claim 1, Van Brocklin teaches:

- A magnetic memory, comprising:
- at least two magnetic memory cells configured to store data;

(Note: Fig. 1, reference sign (28) in Van Broklin)

However, Van Brocklin does not explicitly teach;

- a control system configured to at least twice obtain parametric values from the magnetic memory cells and generate a corresponding compressed fault map using the parametric values, wherein at least one of the compressed fault maps is compared to a previous one of the compressed fault maps and an indication is provided if there are differences.

Marinissen, in an analogous art, that teaches method and apparatus for testing a memory array using compressed responses teaches:

- a control system configured to at least twice obtain parametric values from the magnetic memory cells and generate a corresponding compressed fault map using the parametric values, wherein at least one of the compressed fault maps is compared to a previous one of the compressed fault maps and an indication is provided if there are differences.

(Note: Figures 3A and 3B and col. 4, lines (22-67) in Marinissen)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van Brocklin with the teaching of Marinissen to include compressed fault map and compare to a previous one of compressed fault maps.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized the need to reduce undetected faults in magnetic memory array.

5. In regard to claim 9, Marinissen teaches:

- The magnetic memory of claim 1, wherein the one of the compressed fault maps is compared to the previous one of the compressed fault maps by comparing bits of the one of the compressed fault maps to bits of the previous one of the compressed fault maps, wherein an indication is provided if there are differences.

(Note: Abstract, lines (9-13) in Marinissen)

6. In regard to claim 10, Van Brocklin and in further view of Marinissen substantially teaches all the limitations of claim 1.

However, Van Brocklin and in further view of Marinissen does not teach:

- The magnetic memory of claim 1, wherein the previous one of the compressed fault maps is generated using parametric values obtained from the magnetic memory cells the first time that the control system obtains the parametric values from the magnetic memory cells.

Davis, in an analogous art, teaches fault tolerant magneto-resistive solid-state storage device discloses:

- the compressed fault maps is generated using parametric values obtained from the magnetic memory cells the first time that the control system obtains the parametric values from the magnetic memory cells.

(Note: sections [0063] and [0064] in Davis)

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teaching of Van Brocklin and Marinissen with the teaching of Davis to include using the parametric values of the compressed fault map.

This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized the need to reduce undetected faults in magnetic memory array.

7. In regard to claim 11, Van Brocklin teaches:

- The magnetic memory of claim 1, wherein the previous compressed fault map is stored in at least one of the magnetic memory cells.

(Note: Abstract in Van Brocklin)

8. Claim 19 is rejected for the same reasons as per claim 1.

9. Claim 26 is rejected for the same reasons as per claim 1.

10. Claim 27 is rejected for the same reasons as per claim 1.

11. Claim 34 is rejected for the same reasons as per claim 1.

12. In regard to claim 35, Van Brocklin teaches:

- The method of claim 34, wherein generating the first compressed fault map or generating a second compressed fault map includes sorting the fault types and the corresponding addresses of the magnetic memory cells into a numerical order before the first compressed fault map or the second compressed fault map is generated.



(Note: Fig. 4 in Van Brocklin)

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

13. Claims 12 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Van Brocklin.

The applied reference has Hewlett Packard as a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

14. In regard to claim 12, Van Brocklin teaches:
- A controller for a magnetic memory which includes at least one array of magnetic memory cells configured to store data, comprising:
  - firmware configured to store a procedure for obtaining parametric values from magnetic memory cells in the array of magnetic memory

cells and generating a compressed fault map using the parametric values; and

(Note: Fig. 1, reference sign (24) in Van Brocklin)

- a microcontroller configured to execute the procedure a first time to generate a first compressed fault map, wherein the microcontroller executes the procedure at one or more time intervals after the first time and compares a second compressed fault map generated at each time interval to the first compressed fault map and provides an indication if there are differences between the second compressed fault map and the first compressed fault map.

(Note: col. 1, lines (10-67) through col. 2, lines (1-40) in Van Brocklin)

15. In regard to claim 25, Van Brocklin teaches:

- A magnetic memory, comprising:
- at least two magnetic memory cells configured to store data; and
- control means configured to periodically obtain parametric values from the magnetic memory cells and generate a corresponding compressed fault map using the parametric values, wherein at least one of the compressed fault maps is compared to a previous one of the compressed fault maps and an indication is provided if there are differences.

(Note: Fig. 1 in Van Brocklin)

***Allowable Subject Matter***

16. Claims 2-8, 13-18, 20-24, 28-33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

17. The prior Art of record and in particular Van Broklin and further in view of Marinissen teaches substantially all the limitations in claim 1.

However, the prior art do not teach, suggest, or otherwise render obvious:

- The magnetic memory of claim 1, wherein each one of the compressed fault maps includes at least one error detection code result which is calculated over the addresses of the magnetic memory cells which have a fault, wherein each one of the magnetic memory cells has a corresponding one of at least two addresses, and wherein the one of the magnetic memory cells has the fault when a corresponding one of the parametric values is not within an expected range.

As structured in claim 1.

18. Claim 3 depend from claims 2.
19. Claim 4 has a similar language as in claim 2.

20. Claims 5-8 depend from claim 4.
21. Claim 13 has a similar language as in claim 2.
22. Claim 14 depend from claim 13.
23. Claim 15 has a similar language as in claim 4.
24. Claims 16-18 depend from claim 15
25. Claims 20 and 22 have a similar language to claim 4
26. Claim 21 depend from claim 20.
27. Claims 23 and 24 depend from claim 22.
28. Claim 28 has a similar language as in claim 2.
29. Claim 29 depend from claim 28.
30. Claim 30 has a similar language as in claim 4.
31. Claims 31-33 depend from claim 30.

### ***Conclusion***

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
  - Katayama et al. US patent no. US 6728138 teaches semiconductor memory device having faulty cells.
  - Kim US patent no. 6381710 teaches error logging method utilizing temporary defect list.
  - Singh US patent 5233614 teaches fault mapping apparatus for memory.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

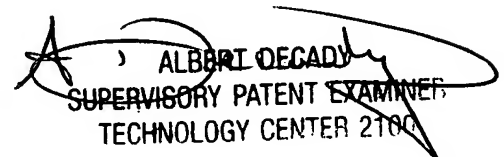

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

Sam Rizk, MSEE, ABD

Examiner

ART UNIT 2133



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